AMSAT SATELLITE REPORT

Number 31
April 26, 1982

Editor: Vern Riportella, WA2LQQ
Contr. Editors: Bob Nickels, KEØT
Harry Bluestein, N6TE
Managing Editor: Bob Myers, W1XT

RS Activity Week Not Well Attended

Poor public awareness is generally being blamed for the disappointing showing on the USSR International Activity Week held 9 April through 15 April. The first indication of anything going on occurred only a day or two ahead of the opening of the activity week when the bulletin board features of Radio 5 and 7 satellites announced the event. The dates were apparently selected to coincide with the 21st anniversary of the first flight of man into space. That happened 21 years ago when Yuri Gargarin, UA1LO, became the first man in space.

News of the activity week and the entry rules first came to *ASR's* attention via a translation of Sovetskiy Patriot for 24 March. That translation arrived too late for *ASR* and missed the Nets by a day as well. The following is a rough translation of that article for those who wish to send entries.

"The Bureau of the Presidium of the FRS [Federation of Radio Sport] of the USSR has decided to conduct an International Activity Week for Radio-communication using the on-board repeaters of radio amateur satellites. The Activity Week will take place from 0000 UT 9 April to 2400 UT 15 April. Credit will be given for radiocommunications conducted by cw and ssb alike. Repeat contacts will count only if they occur on different UT days.

"Awards to winners will be made to foreign participants based on continents and for Soviet participants based on callsign areas of the USSR. Teams of collectives [multi-op stations] and individual operators can qualify for medals and diplomas which will be issued to the holders of the first three places in each class. Observers [SWLs] will be issued certificates. Holders of the first ten places in each class will receive certificates.

"Reports containing full data on the contacts (including both the satellite number and orbit number) are to be sent to the Satellite Communication Committee of the FRS of the USSR [Box 88] not later than 1 July 82."

Since AMSAT no longer recognizes orbit numbers as a unique means of identifying satellite location/time, AMSAT suggests you submit your data with the time and estimated position (SSP) in lieu of orbit number.

ASE Bulletin Board On-Line

AMSAT Software Exchange (ASE) Director Bob Diersing, N5AHD, has announced the institution of a trial bulletin board system. The system has been under development for several months according to N5AHD. It is now prepared to receive calls from stations equipped with Bell 103-type modems at (513) 852-8194. Hours of operation are 0400 to 2300 UTC Monday through Friday only.

According to N5AHD the system was designed with three major objectives:

1. Quick access to information about the ASE.
2. Late info on satellite operations including orbital elements.
3. Information exchange among stations with interest in both amateur radio satellites and computers.

The bulletin board is now being operated on a trial basis with future developments depending on user interest. The schedule shown above is the minimum and it may be available at other times. Individuals who are familiar with bulletin board systems will have no difficulty communicating says N5AHD. Comments and/or suggestions may be addressed to N5AHD at his callbook address.

UoSAT Status: Two Steps Forward, One Back

When AMSAT Director Pat Gowen, G3IOR, arrived at the Board of Director's meeting in Washington earlier this month, he brought with him the latest UoSAT Spacecraft Operations report by Dr. Martin Sweeting, G3YJO, Program Director of UoSAT. The report explained several of the frustrating problems that have beset UoSAT since its October 81 lanuch. On the bright side, G3YJO reported all of the on-board experiments had been checked out and all were found to be in good shape except the 40 keV geiger counter. The counter apparently suffered a shattered window upon launch.

Thus it seemed all the more ironic when virtually on the eve of the close of the Board meeting a new, potentially critical problem arose.

Due to an apparent software error both the 2 meter and 70 cm beacons were commanded simultaneously. Commanding of the spacecraft had always been done on the band which was inactive at that moment. Thus, when the 2 meter beacon was active the commanding was accomplished on 70 cm and vice versa. This was done to sidestep the severe densensing of the receiver on the same band as the active beacon. But what is to be done with *both* beacons active?

This was the situation at press-time with both beacons on and sending FM tones but no telemetry. Contingency plans were being evaluated if it were eventually found

necessary to commit stations with very high ERP to the task. If commanding is to be done at 70 cm, *ASR* has learned that the 26 meter (85 foot) dish near Washington known as NSS may be made available. It is often used for amateur EME work and has a 70 cm feed ready. If, on the other hand, 2 meters is opted, a prominent EME enthusiast has volunteered his resources. Dave Olean, K1WHS, of Lebanon, Maine, whose 2 meter EME array of Boomers graced the cover of *QST* recently, has volunteered his services should they be needed. Dave's array boasts an incredible 26 dBi (measured) gain!

The copious amounts of power are needed to overcome the effects of densensing caused by the beacon transmitters. Careful calculations are being made to evaluate how much power is needed and to insure that too much power will not be used to avoid sizzling the front end of the UoSAT receivers.

Meanwhile, a puzzled potential user community sits by wondering if the odyssey of UoSAT's first months in space will yield to productive experiments or continue to disappoint.

20th Anniversary Certificate Delay

ORBIT Magazine Editor WA2LQQ announced recently that in order to place *ORBIT* back on schedule, it has been necessary to postpone other projects for a while. The 20th Certs had been planned for distribution by March but with the efforts being expended on *ORBIT*, this objective proved impossible, said the editor. The backlog of work on *ORBIT* and *ASR* appears to be dwindling and "I feel we can fill those hundreds of envelopes in the next 60 days" suggested WA2LQQ. Other second-order projects now on "hold" include the "Who's Who in Amateur Satellites" publication discussed last year as well as a catalog of AMSAT trinkets and goodies. Volunteers to assist in these projects "are actively...nay...fervently sought," submitted WA2LQQ.

AMICON Conference Held

Developments aimed at advancing the planning effort for AMICON, the AMSAT International Computer Network, took a positive step 27 March with a continent-wide conference call. Representatives of AMSAT, AMRAD, Tuscon Area Packet Radio, Bay Area and Northern New Jersey Packet Radio groups participated.

The special conference bridge was prepared by W4OWA and donated by AT&T for AMSAT use in furthering amateur radio satellite objectives. It was the same type of bridge which afforded the amateur radio world the excellent coverage of UoSAT-OSCAR 9's launch last autumn.

Hank Magnuski, KA6M, who is AMICON System Engineer, represented the Bay Area. Den Connors, KD2S, spoke on behalf of the Tuscon group. Steve Robinson, W2FPY, who is AMSAT's Director of Research and Development, spoke for the Northern New Jersey group. Paul Rinaldo, W4RI, President of AMRAD, represented that organization. Representing the Operations Directorate of AMSAT were Rich Zwirko, K1HTV, Operations Vice President, and Bob Ruedisueli, W4OWA. Vern Riportella, WA2LQQ, AMSAT Executive Vice President, Chaired the meeting.

The meeting focused on key issues concerning start-up of AMICON operations on the Phase IIIB SSC (Special Service Channel), what types of modulation should be used for an interim standard; for a long-term goal; protocol updates and compatibility questions; local area net interfaces; potential for inter-SSC collision. The meeting lasted for about 90 minutes. Specific follow-up actions were to be taken by KA6M, W4OWA, KD2S and K1HTV. Future meetings of this type are to be held. Everyone present indicated they were gratified at the progress made.

Decals Make Debut At Dayton

The long-awaited decals made their debut at the Dayton Hamvention in Ohio this past weekend. The colorful blue and white stick-ons show the AMSAT logo and a Phase III satellite appropriately enclosed in an oval (elliptical) shaped decal. The words "international satellite" emphasize the scope of the project.

The decals are coated on the back with a pressure-sensitive adhesive and are thus suitable for application on the exterior surfaces of objects such as attache cases, auto bumpers, windows, spacecraft shipping containers, etc. The decals were especially developed in West Germany for world-wide use by our colleagues at AMSAT DL.

Price of the decals, reproduced here full sized, is $1.00 each, U.S. with a SASE or $1.40 for the first one without SASE and $1.00 each thereafter. Send check or money order to AMSAT, P.O. Box 27, Washington, D.C. 20044.

ASR *Spotlight ON: WØPN*

While a relatively large group of hams, worldwide, make constructive use of the OSCAR series of satellites, another group relatively small but also worldwide in composition, makes the satellites technically and economically feasible.

The time and expertise donated by this "hard core" is a major factor in enabling AMSAT to build satellites costing in the hundred thousand dollar range as compared to millions for commercial versions.

One of the specialists now heavily involved in the creation of the Phase III satellites is Ron Dunbar, WØPN. In the opinion of Tom Clark, W3IWI, Ron and Karl Meinzer, DJ4ZC, are the world's leading authorities on the computer language which would have been used on Phase IIIA and which will be used on Phase IIIB.

The language, known as IPS, for "Interpreter for Process Structures," is an elegant synthesis of Stoic, Forth, and the ideas of Dr. Meinzer. Ron brought the language back from Germany on tape cassettes before AMSAT had acquired disc drives and associated peripherals.

Born in Sink's Grove, West Virginia, Ron's first exposure to electronics came when a "nice old lady" gave him a hand-cranked telephone and later an old radio set built on an oak board.

"This old radio used 201-As and the sockets were mounted on top of the board so I took it apart," Ron says, with a tear in his eye.

Later, the call WN8TKO was acquired, high school was completed and a stint at the West Virginia Institute of Technology ended when Ron joined the Air Force and proceeded to Keesler Air Force Base in Biloxi, Mississippi.

There he learned the maintenance of radio equipment such as the ARC-3, ART-13 and the Collins 618-S1.

Further specialized education got him assigned to such diverse places as Pakistan, Saudi Arabia, Wake Island and Duluth, Minnesota.

The tour on Wake was a ham's dream. An old, beat-up Super Pro and a home-brew AM transmitter aided and abetted by an 8-wave V beam oriented towards the United States made Wake and W8TKO/Wake popular indeed.

Ron's arrival in Duluth, on the other hand, was inauspicious. Duluth is at about the same latitude as Paris, France, but the winters there are more like those in Moscow, USSR. Ron arrived in Duluth in mid-January. But Ron learned that a cold climate is not necessarily a bad one. He and his wife, Joanne, were married in Duluth that spring.

In the fall of 1956, when his Air Force hitch was up, Ron finessed a job with IBM at a then secret installation that had just been made operative in Duluth—something called SAGE, for Semi-Automatic Ground Environment; the first major teaming of computers and radar for air defense.

He became a member of the crew which maintained two huge computers, each containing about 60,000 tubes. The SAGE building had no heating system, but it did have air conditioning.

Later came a transfer to IBM's commercial division and exposure to computer language—more specifically, to machine language. At the time, there was only one high-level computer language extant, something called JOVIAL, for Jule's Own Version of International Algebraic Language. Ron credits his ability to handle strange computer languages to his extensive exposure to machine language.

The 17-year stay with IBM included assignments in Maryland, Pennsylvania, Wisconsin, Minnesota and Illinois. It also meant acquiring calls such as KØVRS, W3AQJ, WB9NLF and WØMJS. The WØPN call was acquired after Ron had left IBM and gone into business for himself.

Then came the OSCAR satellites. "John (WØLER), who was there from day one, dragged me into the program," Ron says.

Ron and John also cooperated in developing a new TU for OSCAR 6 telemetry, something called AINT—for ALL IC, No Toroid.

In 1977, planning for the Phase III satellite was well under way and Ron's knowledge of computers was enlisted in the effort. In 1978, a trip to Germany and two weeks with DJ4ZC resulted in Ron's bringing back IPS and the methodology for adapting it from 1802s to AMSAT 8080 machines. Ron calls the trip to Germany the high point of his career.

With the telemetry for Phase IIIB well in hand he thinks challenges facing AMSAT in the post-Phase III era will require new people; new enthusiasm.

"We probably will next be looking at a synchronous satellite; then perhaps later something more complex. The ham satellite program could go on forever.

"At some point, there will have to be greater division of duties; more people involved, and very likely, some more paid employees. Right now we are demanding too much of the Washington group."

Ron may be right—we may be at the end of an era; at some kind of watershed. We can't read the future. But we do know that whatever the future holds, AMSAT will continue to progress as long as it has members with the zeal and expertise of people like WØPN.

	RS-3	RS-4	RS-5	RS-6	RS-7	RS-8
Element Set #	22	29	27	18	30	57
Ref. Epoch	82 98.72450633	82 98.04154588	82 100.26691462	82 97.73830198	82 100.33917693	82 96.05874638
1st Der. Mean Mot.	0.00000005	0.00000070	0.00000062	0.00000062	0.00000065	0.00000201
Inclination	82.9588	82.9568	82.9569	82.9558	82.9570	82.9584
RAAN	216.9199	218.3737	217.3410	217.6959	216.8271	219.8294
Eccentricity	0.0058035	0.0016733	0.0008222	0.0049476	0.0021325	0.0018995
Arg. of Perigee	222.8371	280.8892	309.9704	236.3142	238.3512	356.0243
Mean Anomaly	136.8165	79.0289	50.0623	123.3200	121.5469	4.0646
Mean Motion	12.15574630	12.26647694	12.05025923	12.13542247	12.08663082	12.02918661
Rev. # of Ref. Epoch	1364	1346	1371	1350	1376	1318
Anomalistic Period	118.519*	119.395*	119.556*	118.717*	119.196*	119.764*
Longitude Increment	29.756*	29.975*	30.016*	29.806*	29.926*	30.068*

*Calculated during April.

WØMD Joins ASR Staff

This edition of *ASR* includes the first contribution by our newest staff member, George Johnson, WØMD. George's initial "beat" includes the "Spotlight" column. His story on fellow Duluthian WØPN appears elsewhere in this *ASR*.

George is a native of Duluth, Minnesota. He has an interesting and colorful background besides his achievements in the amateur domain. Most recently he was editor and columnist with the Duluth News-Tribune. George took eight years leave of absence from United States Steel to serve as Mayor of Duluth prior to the newspaper stint.

Mayor Johnson was first licensed in 1939 as W9MOJ in the era prior to "zero" district allocations. He obtained WØMD in the late sixties after nearly two decades of inactivity on the ham bands.

George is a veteran OSCARite having been "aboard" OSCARs 6 and 7. His main joy is building, however. He particularly enjoys building VHF amplifiers and low-noise pre-amps. His present 2 meter rig comprises a TS-700S, stripline KW and a pair of stacked junior boomers.

Watch for George's future columns here in *ASR* and for WØMD on the bands.

Central States Conference Slated

The 16th Annual Conference of the Central States VHF Society will be held 30 July through 1 Aug. at the Baton Rouge Hilton, Baton Rouge, Louisiana. Speakers this year include W1XX of ARRL, WB5LUA and K6MYC with talks on dish feeds, sky noise and antenna stacking. Further info can be obtained from W4FJ, Ted Mathewson, Secretary, 1525 Sunset Lane, Richmond, VA 23221. Send an SASE with your inquiry.

	AO-8	UO-9
Element Set #	645	164
Ref. Epoch	82 100.52797024	82 100.91184917
1st Der. Mean Mot.	0.00000354	0.00014921
Inclination	98.7823	97.4864
RAAN	128.4694	64.5173
Eccentricity	0.0006638	0.0004779
Arg. of Perigee	94.3824	14.4423
Mean Anomaly	265.8209	345.6920
Mean Motion	13.96444810	15.14886308
Rev. # of Ref. Epoch	20885	2819
Anomalistic Period	103.176*	95.124*
Longitude Increment	25.796*	23.781*

*Calculated during April

AMSAT Satellite Report *is published and mailed First Class bi-weekly by The Radio Amateur Satellite Corporation, P.O. Box 27, Washington, DC 20044 for the purpose of enhancing communications about the Amateur Radio Satellite Program. Subscription rate is $18.00 ($26.00 overseas) yearly by check or money order to "Satellite Report," 221 Long Swamp Road, Wolcott, CT 06716. Information published herein may be quoted without permission provided credit is given.*